

What is claimed is:

1. A spool comprising: a hub sandwiched between two flanges at least one of said flanges including at least one smoothly curving arcuate fiber groove on a side facing said hub, said fiber groove extending substantially to the outer edge of said flange, said groove being at an angle  $\theta$  relative to the tangent line to the periphery of said flange, said groove being capable of reversing the direction of fiber.
2. The spool according to claim 1, wherein said angle  $\theta$  is less than 15 degrees.
3. The spool according to claim 2, wherein said angle  $\theta$  is less than 5 degrees.
4. The spool according to claim 2, wherein said angle  $\theta$  is less than 3 degrees.
5. The spool according to claim 1, wherein said flange has a plurality of fiber grooves, each of said fiber grooves being characterized by a different bend radius  $R_i$ , at least one of said fiber grooves extending at said angle  $\theta$  substantially to the outer edge of said flange.
6. The spool according to claim 5, wherein said fiber grooves are semicircular and are characterized by different radii of curvature.
7. The spool according to claim 1, further containing fiber, wherein said fiber groove allows the fiber to reverse direction, so that fiber leads point in the same direction.
8. The spool according to claim 1, wherein said flange includes at least two fiber grooves, one of said fiber grooves allows the exiting fiber to reverse direction, so that fiber leads point in the same direction, and another one of said fiber grooves allowing the fiber leads to point in opposing directions.
9. A method for making a spool comprising the steps of:

- (i) providing at least two flange preforms;
  - (ii) trimming said preforms to a desired size, thereby producing a flanges of desired diameter;
  - (iii) providing a hub;
  - (iv) assembling the hub and the flanges into the spool.
10. A method according to claim 9, further including the step of winding fiber around said hub.
11. A flange preform suitable for making flanges of various sizes, said flange including at least one fiber groove and trimable material, so that when said trimable material is cut off to form a flange of a specified outer diameter, said fiber groove extends substantially to the outer edge of said flange, said groove being at an angle  $\theta$  relative to the tangent line to the periphery of said flange, said groove being capable of reversing the direction of fiber.
12. The flange preform according to claim 11, wherein said angle  $\theta$  is less than 5 degrees.